InStream Corporation

Development of Seamless Electronic Data Processing for the Behavioral Health Care Sector

In the early 1990s, the transaction-processing systems used by the medical services sector were paper-based, cumbersome, and slow. Behavioral healthcare (BHC) providers, who deal with problems such as alcoholism, depression, and traumatic stress, exchanged paper referrals, authorizations, evaluations, and claims via the U.S. mail with multiple managed care payers. To address this problem, a joint venture sought to use the emerging electronic commerce environment, or World Wide Web, to facilitate this data processing.

InStream Corporation, a company founded to develop an automated transaction processing product for the electronic commerce market, formed a joint venture with two other companies to apply for Advanced Technology Program (ATP) funding under the focused program, "Information Infrastructure for Healthcare."[1] The partnership proposed to improve the entire transaction flow for the BHC sector by developing software that providers could install on their office computers. This software would analyze each transaction for accuracy and completeness as stipulated by the receiving payer. After the providers corrected any errors or omissions, one mouse click would "instream" a batch of claims to the payer(s) through AT&T's EasyLink Electronic Data Interchange (EDI). This process would be faster and more accurate and would involve less human intervention, which would reduce the cost of BHC transaction processing. Eventually, although a variety of transactions was fully supported by the InStream software, the primary interest for providers was in having claims paid quickly. Therefore, InStream devised a multiplayer transaction service called "MultiClaim" to meet that need by using the InStream software.

MultiClaim software was never fully successful because payers developed their own Web portals or interactive real-time transaction Web sites that they felt kept their proprietary interests at lower costs. Consequently, the major providers and their payers had no need to seek a custom product such as MultiClaim.

COMPOSITE PERFORMANCE SCORE
(based on a four star rating)

No Stars

Research and data for Status Report 94-04-0018 were collected during March – May 2004.

Behavioral Healthcare Claims Processing Was Fragmented

In 1994, less than 5 percent of the $100 billion in claims from the mental health and substance abuse services sector was processed via computer. Claims verification and processing was cumbersome and time consuming because providers had to submit and receive to and from several payers a chain of transactions (referrals, authorizations, evaluation reports, follow-up reports, and claims) all on paper, most often via U.S. mail. A joint venture consisting of InStream Corporation (claims initiator and processor), Axint Corporation (a software developer), and AT&T EasyLink, one of the first electronic data interchange (EDI) networks, wanted to solve the problem by automating forms generation as much as possible. They proposed to design a system that would automatically generate and fill in the information on an electronic medical claims transaction form, without the additional cost of human intervention.

[1] The project was changed to single applicant status two years after project start.

Whatever forms were needed would be automatically generated when certain transaction types were selected. Moreover, most of the data would be filled in electronically on the forms from other forms for a given patient, forms that had already been received in the behavioral healthcare (BHC) providers' offices. This automated process would link forms together and send them electronically, after fulfilling edits and validations, thus saving time and money compared to the paper chase of send, receive, correct, and send again.

The fragmented nature of the BHC sector made it particularly suitable for automation. At the time of the project proposal, there were more than 320,000 individual BHC providers and provider organizations in the United States, including hospitals, clinics, psychiatrists, psychologists, social workers, counselors, and therapists. Due to the complexity of the transactions and the multiple payer and provider management systems in place, private funding to finance this kind of high-risk research to automate the transaction process was difficult to obtain. However, the joint venture partners felt that a successful prototype would speed acceptance of electronic processing. For example, the partners estimated that if prototype software were successful and widely accepted, this software could save $9 billion annually in the BHC sector alone. A successful solution would also enhance the quality of patient care by simplifying hospital admissions and medical treatment claims processing. Furthermore, a successful prototype would attract more private venture capital. (After InStream successfully developed and tested the prototype, the company received $8.3 million from several venture capital firms.) Based on these significant anticipated benefits, the joint venture submitted a proposal and won ATP funding in 1994 as part of the "Information Infrastructure for Healthcare" focused program. The two-year project began in 1995.

Entrepreneurial Companies Faced Challenges in the Behavioral Healthcare (BHC) Market

The challenges the joint venture faced in developing an electronic transaction-processing system were daunting. Several reasons for this are described below:

- Resistance to innovation by the largest managed care organizations (MCOs). Under the managed care system, the MCO's created networks of physicians, hospitals, and other healthcare professionals in order to manage cost, quality, and patient access to healthcare. The MCOs were reluctant to pay for and implement a system that would require them to enforce standardized transactions with their network providers. Since the providers belonged to multiple MCO networks, the fear was that their competitors would simply take advantage of the InStream claims-transaction technology that they would have paid to install and train providers to use. The MCOs viewed that possibility as a loss of competitive advantage. However, the implementation of the Health Insurance Portability and Accountability Act (HIPAA) of 1996 addressed that problem by 1998 by enforcing the eight primary, standardized EDI transaction data sets. This enforcement removed any competitive advantage previously gained by using the proprietary (processing) data sets used by MCOs.

- Computer system incompatibilities. MCOs and their provider groups had widely varying and incompatible levels of computer hardware and software functionality. For example, an MCO might have a UNIX platform, while a provider's office might use a DOS or Microsoft Windows platform.

- The highly sensitive, subjective, and non-standardized nature of behavioral health records. The BHC sector has historically been resistant to automating records, partly due to privacy issues. Behavioral health issues involve social problems like alcoholism or drug abuse, so maintaining strict client confidentiality regarding patient records is necessary. If patients feared that their confidentiality might be breached, they might not seek needed treatment. This increased providers' reluctance to use an unfamiliar electronic system that did not have a physical presence like paper records or even facsimile copies.

"One-Click" Solution Could Streamline Transaction Processing

InStream's plan was to create a software product that was easy to install and use and that could interoperate with other records-processing programs on a commonly used platform, such as Microsoft Windows. InStream's original intent was to provide full BHC managed care document cycles beginning with the referral, which is the first step leading to services that would generate a claim. This function would be performed by the

InStream Provider Network (IPN) software (the version IPN3.0 was the first release; toward the end of the project 3.1 was released, as depicted in Figure 1). However, early in the project, the team realized that the providers' immediate need was for the claims completion process, or paying the providers for their services. In response to that need, InStream developed the MultiClaim service, based on their IPN software, for installation on the providers' office personal computers (PCs). The joint venture developed a Windows version first, then the intention was to follow with other PC operating systems software.

Figure 1. The IPN software, shown in its last release 3.1, provided full behavioral managed care document cycles.

MultiClaim was a business process service that used an application programming interface between the IPN software and the provider's practice management system. MultiClaim provided a one-to-one and a one-to-many method for the claims-filing process. ("One-to-one" is when the provider transacts directly with one payer; "one-to-many" is when one provider sends multiple types of transactions to several payers for different services for different patients.) The MultiClaim service and software would process all the required forms to accomplish the tasks necessary to complete the filing. The software was installed on the provider's PC, enabling the provider to submit a batch of claims for several clients. The software would then open each claim and analyze it for errors and completeness. After the provider corrected any identified omissions or errors, the provider then submitted the batch electronically (via AT&T's EasyLink) to InStream. InStream sent the individual transactions either directly to the payer or through the payer's clearinghouse. (A clearinghouse is a service that contracts with multiple payers to perform some of the claims processing that InStream aimed to provide. One of InStream's business goals for MultiClaim was to have the software replace the function of the clearinghouse as more payers signed up for direct transactions.)

Initial Product Development Progress

The joint venture partners planned to spend the two years of ATP funding on research, development, and testing. After that, the funding would be self-sustaining as paying clients were serviced by the MultiClaim product. The software to be developed by InStream involved modifying Axint's exiting product called FormLink. This proprietary form-generating software was originally designed for property and casualty insurance clients to facilitate automation and reduce paper transactions between the companies and their independent agents.

The first obstacle in modifying FormLink for the ATP-funded project surfaced several months into the first year. When InStream began talking to MCO clients who could pilot-test the software to be developed, InStream's sales team noticed reluctance among the payer users to participate in the pilot test. Axint felt that customization to meet the MCO requests would make FormLink too unique for its own commercial-off-the-shelf product plan. Consequently, InStream changed its relationship with Axint from partner to subcontractor in mid-1996 in order to enhance the product's future marketing prospects by taking over the customization of code and not relying on the FormLink software. By changing the nature of its business partnership with Axint, InStream reduced the visibility of its relationship with Axint, since MCOs were concerned about the dependency of the relationship. (In the BHC claims transaction business, excessive dependence on customized software was not regarded as a solid foundation for future business growth). With Axint as a subcontractor, InStream successfully completed pilot tests of the software by October 1996 with five MCOs, among them U.S. Behavioral Health, Foundation Health MHN, and Magellan.

InStream Faces Marketing Challenges During the Commercialization Year

After the conclusion of the research and development phase of the project in April 1997, at the same date that the ATP project ended, InStream was working with 24 provider practice management vendors. (A practice management vendor sells products to help doctors with

the day-to-day management of their practices, such as patient billing). These 24 vendors serviced 75 percent of the BHC provider market. Approximately 72 provider provider facilities, or 1,500 practitioners, had signed up and were using the software and services with four MCOs, which represented 45 percent of the BHC market. (In 1996, nine MCOs had 85 percent of the market. An MCO's provider base ranged from several groups to over a thousand groups. The average number of providers in a group was three.) However, at the conclusion of the research and development phase, InStream management realized that they had not developed an effective sales program to target the MCOs. They then began work on implementing a sales plan, and after a few months, sales increased. However, the company began to falter later when several MCOs did not follow through on their commitments to buy and roll out the product to their provider networks. About this same time, AT&T lost interest in providing the EDI platform for transmitting the claims, after the InStream management team decided to enable MultiClaim to work on the Web, not requiring the use of AT&T's EasyLink EDI.

The prototype software could save $9 billion annually in the BHC sector alone.

In March 1998, subcontractor Axint was falling behind in providing technical support for the continued software modifications required by InStream. This support backlog caused a delay in bringing accomplished sales of the software online. (Only about 10 percent of the sales at that time had been brought successfully online.) That same month, a year after the project ended, InStream's product marked its first operational and sales success from a telemarketing effort. One thousand provider facilities had bought the software, which translated to 1,000 to 10,000 practitioners (depending on how many practitioners resulted from each facility). Many of the providers had been sending claims through a clearinghouse, which validated them and then forwarded the claims to the payers. Envoy, a prominent clearinghouse used by many MCOs, agreed to become the partner clearinghouse with InStream because of the overwhelming number of payers already using Envoy. Envoy and Instream agreed on what claim data formats coming out of InStream's software were acceptable and correct for Envoy to forward to the payer. InStream continued to provide the end-to-end transaction services for the clinical forms that Envoy did not support such as referrals, authorizations, evaluations, and follow-ups.

InStream Attempts to Navigate the Entrepreneurial Hazards of the Dot-Com Period

Although InStream made progress in signing up clients and shipping MultiClaim after the ATP-funded project ended, the company's commercialization efforts ended because of two major obstacles in the BHC market.

First, the MCOs were suspicious of independent small companies using proprietary software, viewing these companies as competition. The MCOs did not want the small companies to become electronically enabled. Early in the post-project commercialization stage, InStream had only 60 BHC facilities fully online of the 1,000 that had signed up. This was because U.S. Behavioral Health had paid InStream to train only their provider members how to install and use the MultiClaim software. (Not all of the 1,000 provider signups were U.S. Behavioral Health's). Sixty facilities out of 120 U.S. Behavioral Health preferred provider sites were fully functional since there was an incentive to use a service they were paying for. The remaining providers, which were not being paid by any MCO to participate, had no incentive to use the software right away. The 60 paying facilities represented about 1,000 practitioners, numbers that seemed too small to the other MCOs. In late 1998, a new chief information officer at one of the larger MCOs changed that company's priorities and subsequently the MCO cancelled its commitment to implement MultiClaim throughout one of the New England states. U.S. Behavioral Health, who had been an early adopter and supporter, delayed its own plans for a national rollout into its next fiscal year. About this same time, yet another smaller MCO also cancelled its commitment with InStream for unspecified reasons. In general, the MCOs were nervous about the merger climate that was evolving at that time, and they did not want to make expenditures they would have to cancel later.

The second obstacle was that the Health Care Financing Administration (the agency that administers Medicare) began to grant exemptions to states to "carve out" portions of the Medicaid BHC sector for privatization. (Privatization is the changing of payer

reimbursement from Medicaid to any company competing with the MCOs to provide the same services.) This meant that the BHC MCOs needed to spend more on fighting marketshare battles than on a new technology for provider transactions. With all the mergers going on, the MCOs did not want to lose any market share to competing companies.

By October 1998, MultiClaim had been commercialized and sold to more than 1,200 facilities, and 600 were actively using the software. However, InStream needed more cash to continue to provide upgrades to the software and to expand into other healthcare segments (such as home healthcare and workers' compensation). An investment banker worked with InStream and the original venture capital investors to make five acquisitions to improve both market share and cash flow. Subsequently, this final round of financing (called "mezzanine" in the venture capital business) before the Initial Public Offering collapsed when the investment banker withdrew financing due to negative market conditions for all healthcare technology ventures. An influencing factor was the postponement by two MCO InStream clients that had previously indicated they were going to sign on with the InStream software. In addition, a third MCO client cancelled altogether. Unable to secure more funding, InStream went out of business in October 1998.

Aftermath: Lessons Learned

The InStream management team acknowledged several factors that impeded the commercialization of the InStream Provider Network software and the MultiClaim services based on it. Chief among them were the following:

- Ignoring the challenge of legacy (incumbent) systems already in place at MCOs that were often outdated.The large MCOs were wary of products that did not easily interface with their in-house systems.

- Rapid consolidation of the BHC MCO market during the course of the project. InStream found that, in the event of a merger or takeover, orders for new technology products or services, such as InStream's products, were usually canceled.

- Pursuing an unsolicited, entrepreneurial solution rather than a solution in response to a Request for Proposal or similar solicitation from the industry. The BHC transaction processing market seemed ready for a software product like IPN and MultiClaim. However, competitors were pursuing the same idea and the same venture dollars. A successful mezzanine financing would have provided capital to continue commercialization efforts, but the mezzanine financing did not occur as planned and the failure of the product was inevitable.

- Building a complicated system with too little MCO buy-in to service customers.This became an intense capital drain for InStream during a time when competitors and the MCOs themselves were catching up to the technology and building their own Web-enabled portals.

Despite the failure of the product, it is notable that InStream created the first BHC Web portal. In the pioneering days of electronic commerce, a Web portal for the BHC sector was a new concept. It provided transaction services (MultiClaim), daily news about the industry, continuing on-line education, and a bookstore. Any BHC provider with Web access could join and use these services through their Web browser.

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InStream published one book chapter and articles in two journals on the ATP-funded technology. They presented at 11 conferences and received press coverage in 22 publications. As of 2004, products like MultiClaim and its competitors were obsolete due to the development of extensible mark-up language (XML), a Web-engine language that is independent of operating systems such as Microsoft Windows (with which MultiClaim was designed to interoperate). Axint and InStream went out of business after the conclusion of the project. AT&T EasyLink was acquired by Swift Telecommunications in March 2001.

Conclusion

InStream, AT&T EasyLink, and Axint created a joint venture to streamline the electronic submission of behavioral healthcare (BHC) transactions. The joint venture developed a software product, InStream Provider Network (IPN), and a service based on it, called MultiClaim, that could be installed on providers' personal computers to examine and prepare batches of BHC claims and clinical transactions for submission to payers. MultiClaim saved time and money and helped to improve the claims-submittal process. At its most successful sales point in the post-project period, InStream sold its product to more than 1,200 provider facilities. However, the company was unable to obtain additional venture capital to continue the necessary upgrades and market penetration for their product. Subsequently, the company went out of business approximately one and a half years after the ATP-funded project concluded. Although IPN and MultiClaim were never successfully commercialized, the partners pioneered the first electronic commerce BHC Web portal, which was quickly copied by competitors such as WebMD Envoy in the late 1990s. (WebMD Envoy is a conglomerate of several payer clearinghouses that was acquired by WebMD.) MultiClaim served as the precursor to similar software now in use by many managed care organizations (such as Athenahealth and Navimedix). This type of software has replaced some use of clearinghouses, because it performs many additional functions not previously performed, such as customer eligibility verification. InStream also published its findings in a significant number of publications before the company went out of business.

PROJECT HIGHLIGHTS
InStream Corporation

Project Title: Development of Seamless Electronic Data Processing for the Behavioral Healthcare Sector

Project: To develop a flexible electronic forms system for the behavioral health segment of the healthcare industry and to integrate the system into an easy-to-use, low-cost, accessible electronic network.

Duration: 5/1/95-4/30/97
ATP Number: 94-04-0018

Funding (in thousands):

ATP Final Cost	$1,370	50%
Participant Final Cost	1,382	50%
Total	$2,752	

Accomplishments: With ATP funding, InStream led a joint venture to create the first behavioral healthcare (BHC) Web portal for claims processing.[1] During the project, InStream piloted the system with U.S. Behavioral Health, Foundation Health MHN, and Magellan. Similar portals are in use today by the five largest managed care organizations (MCOs).

Commercialization Status: The software product was briefly commercialized in 1998, but was quickly overtaken by competing products after a lack of funding prevented InStream from providing the necessary upgrades and market penetration to reach positive cash flow. Subsequently, InStream went out of business.

Outlook: The outlook for this software is weak because competitors developed similar software and overtook InStream's product before the company could maintain its lead position by rapidly introducing software updates. Moreover, the company was not able to obtain the venture capital needed to sustain its product to dominance in this market. Today, BHC portals use extensible markup language (XML), a nonproprietary screen text-processing capability that greatly reduces the costs of data transfer. The use of XML was foreseen by the InStream management team toward the end of this project, before it was developed by competitors.

Composite Performance Score: No Stars

Number of Employees: 15 at project start, 0 as of April 2004

Focused Program: Information Infrastructure for Healthcare, 1994

Joint Venture Companies:

The following two companies went out of business:
Lead Company: InStream Corporation
Partner: Axint Corporation

Contact: Dr. Michael W. Hurst (formerly at InStream, now at DeNovis, Inc.)
Phone: (781) 372-3865

AT&T EasyLink (acquired by Swift Telecommunications)
200 Park Ave., 38th Floor
New York, NY, 10166

Contact: Swift Telecommunications
Phone: (212) 445-1800

Subcontractors:
Axint Technologies Corporation (joint partner from May 1, 1995 to May 9, 1996; subcontractor thereafter. (Company is out of business)

Publications:

The project team published the following book chapters:

- Hurst, M. and W. Roiter. "Electronic Data Interchange: A Revolution in How Professionals Communicate." In Trabin, T. (Ed.), *Behavioral Informatics Tomorrow: How Computerization is Transforming Healthcare*. San Francisco: Jossey-Bass Book Publishers and CentraLink, 1996.

- Hurst, M.W. and W. A. Roiter. "The rapid growth of electronic communication." In Trabin, T. (Ed). *The Computerization of Behavioral Healthcare*. San Francisco, Jossey-Bass Publishers, 1996.

The project team published the following articles in journals:

- Roiter, William. "*Soft* Information vs. *Hard* Data," *Employee Assistance*. 1995: August/September.

- Hurst, M. "Going Electronic." *Behavioral Healthcare Tomorrow*. 1995: September/October.

- Rosen, Larry, Ph.D. "The Dawning of the Electronic Commerce Age," *The National Psychologist*, 1996: September/October.

[1] The project was changed to single applicant status two years after project start.

PROJECT HIGHLIGHTS
InStream Corporation

The project received press coverage in 17 news publications:

- "InStream is just what the doctor ordered", Massachusetts High Technology, December 30, 1996.
- Hurst, M.W., C. Muzilla, and S. Graves. "What Role Does Electronic Commerce Play for Behavioral Healthcare?" *Infoconsult News*, 1997: 1(6), 1-2.
- "The First Accredited Online Behavioral Health Courses Will Be Provided, " *Psychotherapy Finances,* April 1997.
- "Rx for Health Care Info", *PC Week*, May 5, 1997.
- "Electronic Commerce Solution Speeds Reimbursements", *Information Management Week*, May 7, 1997.
- "Electronic Commerce Cuts California Group's Time Spent on Paperwork in Half," *Managed Behavioral Health News*, May 15, 1997.
- "InStream Unveils Electronic Commerce for Claims; Providers See Quicker Turnaround," *Managed Behavioral Health News*, May 15, 1997.
- "InStream Releases New Offering," *Massachusetts High Technology*, May 19, 1997.
- "InStream Corporation," *Open Minds*, June 1997.
- "Managed Care Info Exchange," *Insurance and Technology*, June 1997.
- "InStream Corporation and CMHC Systems, Inc.," *Managed Behavioral Health News*, June 12, 1997.
- "InStream Partners with 11 Vendors," *Information Management Week,* June 18, 1997.
- "InStream Teams Up With CMHC Systems," *Mental Health Weekly*, June 30, 1997.
- "HMO-PCP Information Flows InStream," *Medical Interface*, July 1997.
- "Changing the Face of Healthcare," *Electronic Commerce World*, July 1997.
- "InStream Announces Partnership with Creative Socio-Medics," *Information Management Week*, July 16, 1997.
- "InStream and Creative Social-Medics Will Integrate," Managed Behavioral Health News. July 17, 1997.

The project produced 11 presentations, of which the following are a sample:

- Hurst, M. (Moderator) "Electronic Communications between Providers and MCOs -- A Good Thing?" Behavioral Informatics Tomorrow Conference, New Orleans, LA, March 9, 1996.
- Hurst, M. and Fain, E. (Co-Moderators) "Software Development for Behavioral Healthcare." Behavioral Informatics Tomorrow Conference, New Orleans, LA, March 9, 1996.
- Roiter, W. "Toward an Electronic Patient Record: Networking Providers and MCOs." Medical Records Institute Conference, San Diego, CA, May 15, 1996.
- Hurst, M.W. 1997. "How to Use Emerging Communication Technologies to Streamline and Improve Care Management and Delivery." Fourth Annual Behavioral Informatics Tomorrow Conference, Tampa, FL, March 7, 1997.
- Hurst, M.W. 1998. "Electronic Commerce Model Applied to Managed Healthcare: Provider Adoption Challenges." Fifth Annual Behavioral Informatics Tomorrow Conference, San Antonio, TX, March 6, 1998.